guiding light emitted from the at least one light source through a sample to be analyzed to generate a first signal and a second signal different from the first signal;

detecting the first signal to obtain a nephelometric measurement of the sample; and

substantially simultaneously detecting the second signal to obtain a spectrophotometric measurement of the sample.

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42. (New) The method of claim 41, wherein providing at least one light source includes providing first and second light sources.

43. (New) The method of claim 42, wherein providing the first and second light sources includes providing the first light source having a first spectral bandwidth and the second light source having a second spectral bandwidth different from the first bandwidth.

44. (New) The method of claim 43, wherein providing the first light source includes providing the first having a narrow band emission in one of the red and infrared spectral regions.

45. (New) The method of claim 44, wherein the narrow band emission is in the range between 650 nm and 950 nm.

46. (New) The method of claim 43, wherein providing the second light source includes providing the second light source having an emission band of between 300 nm and 800 nm in the spectral regions.

47. (New) The method of claim 42, wherein one of the first and second light sources is in the ultraviolet spectral region.

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48. (New) The method of claim 42, wherein at least one of the first and second light sources is a xenon pulsed light.

49. (New) The method of claim 42, wherein one of the first and second light sources is a light-emitting diode.

50. (New) The method of claim 49, wherein the light-emitting diode emits light in the spectral regions ranging from 800 nm to 950 nm.

51. (New) The method of claim 42, further comprising pulsing at least one of the first and second light sources.

52. (New) The method of claim 41, wherein providing the at least one light source includes pulsing the at least one light source.

53. (New) The method of claim 41, wherein the at least one light source includes two light sources.

54. (New) The method of claim 53, further comprising coupling light emitted from the two light sources into a common beam.

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55. (New) The method of claim 41, wherein guiding the light emitted from the at least one light sources includes guiding the light through a filter.

56. (New) The method of claim 55, wherein guiding the light emitted from the at least one light source further includes guiding the light through a diaphragm.

57. (New) The method of claim 41, further comprising detecting the light for a reference signal.

58. (New) The method of claim 54, further comprising masking out light impinging at small angles around the common beam.

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59. (New) The method of claim 54, further comprising detecting light impinging at small angles around the common beam.

60. (New) The method of claim 54, further comprising detecting light at angles of less than 5 degrees around a forward direction of the common beam.

61. (New) The method of claim 54, further comprising deflecting light out of the common beam.

62. (New) The method of claim 41, further comprising separating out light of an undesirable spectral region to suppress it.

63. (New) The method of claim 41, further comprising exciting the sample to be analyzed with the light emitted from the at least one light source.

64. (New) The method of claim 41, further comprising calibrating wavelengths and absorptions of the light emitted from the at least one light source.

65. (New) The method of claim 41, further comprising amplifying and converting at least one of the first and second signals.

66. (New) The method of claim 41, further comprising commonly controlling detection, evaluation, and presentation of at least one of the first and second signals.

67. (New) The method of claim 41, further comprising performing an in-vitro analysis.

68. (New) The method of claim 41, further comprising changing the position of the sample to be analyzed.

69. (New) An apparatus for carrying out optical measurements, comprising:

at least one light source;

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means for guiding light emitted from the at least one light source through a sample to be analyzed to generate a first signal and a second signal different from the first signal;

means for detecting the first signal to obtain a nephelometric measurement of the sample; and

means for detecting the second signal substantially simultaneously with detection of the first signal to obtain a spectrophotometric measurement of the sample.

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70. (New) The apparatus of claim 69, further comprising two lights sources having different spectral bandwidths.

71. (New) The apparatus of claim 69, wherein the at least one light source includes a narrow band emission in one of the red and infrared spectral regions.

72. (New) The apparatus of claim 69, wherein the at least one light source includes an emission in one of the ultraviolet and visible spectral regions.

73. (New) The apparatus of claim 69, wherein the light emitted from the at least one light source is a pulsed light.

74. (New) The apparatus of claim 70, further comprising means for coupling the light from the two light sources into a common beam.

75. (New) The apparatus of claim 69, further comprising means for detecting the light for a reference signal.

76. (New) The apparatus of claim 69, wherein the means for guiding light includes a filter.

77. (New) The apparatus of claim 69, wherein the means for guiding light includes a diaphragm.

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78. (New) The apparatus of claim 74, further comprising means for deflecting light out of the common beam.

79. (New) The apparatus of claim 74, further comprising means for detecting light impinging at small angles around the common beam.

80. (New) An apparatus for carrying out optical measurements comprising:

at least one light source having a spectral region;

at least one light guidance arrangement for guiding light from said at least one light source along a common beam axis intersecting at least one reaction location and positioned to receive the light from said at least one light source;

at least one filter for separation or combination of at least one desired spectral region and for beam shaping, wherein said at least one filter intersects said common beam axis and is positioned downstream from said at least one light guidance arrangement;

at least one diaphragm for limiting the beam diameter of said at least one light source and for shaping the beam, wherein said at least one diaphragm intersects said common beam axis and is positioned downstream from said at least one light guidance arrangement;

at least one sensor positioned to detect at least one signal generated by a material to be measured and at least one reference signal;

a second diaphragm for masking out the light impinging at small angles around said common beam axis, wherein said second diaphragm intersects said at least one common beam axis, is positioned downstream from said at least one light guidance arrangement, is for masking out the scattered-light impinging at small angles around the

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